NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
FACT SHEET

(pursuant to NAC 445A.236)

Permittee Name: Las Vegas Valley Water System - Springs Preserve
P.O. Box 99955.
Las Vegas, NV 89193-9955

Permit Number: NEV2003507

Location: Las Vegas Springs Preserve Desert Living Center
333 S. Valley View Blvd.
Las Vegas, Clark County NV 89153
Latitude: 36° 10' 04"N, Longitude: 115° 11' 24"W
Township 20S, Range 61E, Section 31

General: The Permittee presently operates a portion of this site at the Las Vegas Springs Preserve as a groundwater production, storage and distribution facility. The Springs Preserve facilities will include a state museum in the future, but presently has a cultural center, riparian wetlands, demonstration gardens and the Desert Living Center (DLC). One function of the DLC is to educate the public in sustainable living activities within the desert environment, including water conservation. The DLC expects up to 600,000 visitors per year.

The Permittee has submitted a discharge permit renewal application to the Division, for the continued treatment of domestic (sanitary) wastewater on-site and use the treated effluent for the purposes of landscaping irrigation and the flushing of water closets (i.e., toilets and urinals) in the facility=s restrooms. The regulations for the reuse of treated effluent for irrigation purposes are contained in NAC 445A.275 through NAC 445A.280. These regulations do not address effluent reuse in plumbing fixtures, and this use is left to the authority of the local building department. Therefore, under the terms of this discharge permit, the Division only authorizes the use of treated effluent for landscaping irrigation purposes which is expected to commence in the Fall of 2008..

Wastewater is generated in the restrooms located in the DLC and sinks located in the garden support facilities. The average flow of domestic (sanitary) wastewater is designed for 8,500 gpd. Wastewater from the DLC is pumped via lift station for primary treatment in a 15,000-gallon double-walled fiberglass-settling tank, which is equipped with a biotube effluent filter for enhanced removal of suspended solids. Wastewater from the garden support facilities will be separately settled in a 4,000-gallon double-walled fiberglass-settling tank. The primary effluent from each settling tank is then combined in a 4,000-gallon equalization tank, which functions as a dosing tank for the constructed wetland cells. The wetland consists of two vegetated treatment cells, each measuring 2,500 ft^2 in area. The wetland treatment cells allow for flow re-circulation and are lined with a 45-mil thick HPDE synthetic liner. The anticipated operating depth in each wetland cell is shallow, e.g., 2 ft. of

water. In addition to BOD_5 and TSS removal, the wetland cells denitrify the effluent to below 10 mg/L of total nitrogen as nitrogen. The wetland cells effluent is then further treated and filtered in a 1,680 ft^2 re-circulating sand filter. Filtration of particles is specified down to 100 microns. Disinfection is performed via calcium hypochlorite in a baffle tank. The tertiary treated, UV-disinfected effluent is discharged to a 2,000-gallon concrete storage tank for on-demand irrigation and/or water closet flushing needs. The Division=s discharge permit allows the treated effluent to be reused outdoors for landscape irrigation of plant materials. The application specifies that the effluent will be delivered sub-surface via drip delivery, which is an efficient means of delivering water to the plant root zone.

Flow: The wastewater treatment facility is designed for 8,500 gpd. The Division=s proposed discharge permit allows the Permittee to supply all of the treated effluent for irrigation purposes, i.e., 8,500 gpd. The Permittee has an approved Effluent Management Plan to ensure that sufficient landscape irrigation is provided to manage this effluent flow. The application indicates that irrigation will occur year-round.

Receiving Water Characteristics: This discharge permit allows the reuse of tertiary-treated, disinfected effluent for landscape irrigation via sub-surface drip delivery. The Las Vegas Springs Preserve is underlain by an unconfined shallow aquifer and a confined principal aquifer. On-site telemetry data indicate that depth to groundwater in the shallow aquifer is 17 ft. bgs. Flow direction is from west to east towards the Las Vegas Wash. The on-site production wells are screened from 500 to 925 ft. in the principal aquifer and provide municipal supply for customers in the Las Vegas Valley. The effluent is denitrified and disinfected. No impact to existing groundwater quality is anticipated from irrigation reuse. The principal aquifer is potable. However, the shallow aquifer is presently considered non-potable due to parameters such as high TDS.

Proposed Effluent Limitations and Special Conditions:

Table 1: Plant Discharge Limitations

PARAMETER	DISCHARGE LIMITATIONS	MONITORING REQUIREMENTS		
	30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Flow, gpd	8,500		Continuous	Flow Meter
BOD_5, mg/L (Influent)	Monitor & Report		Monthly	Discrete

BOD_5, mg/L (Effluent)	30	45	Monthly	Discrete
TSS, mg/L (Influent)	Monitor & Report		Monthly	Discrete

TSS, mg/L (Effluent)	30	45	Monthly	Discrete
Total Nitrogen as N, mg/L (Effluent)	10.0		Monthly	Discrete
Fecal Coliform, cfu or mpn/100 ml (Effluent)	200/100 ml (geometric mean)	400/100 ml	Monthly	Discrete
pH, Std. Units (Effluent)	Between 6.0 B 9.0		Monthly	Discrete

_ *$BOD_{5\ \&}$* TSS: Irrigation reuse requirements in NAC 445A.275 require treatment to a secondary (i.e., biological oxidation) or higher level of treatment. The constructed wetlands and recirculating sand filter are designed to provide tertiary treatment (i.e., biological oxidation and nutrient removal).

_ *Total Nitrogen*: The design specifications indicate that the treatment process is capable of year-round denitrification to below 10 mg/L of total nitrogen as nitrogen. Nitrification and denitrification are performed in both the wetlands and sand filter treatment processes.

_ *Fecal Coliform*: The Division=s applicable fecal coliform standards for drip irrigation systems are specified in NAC 445A.278 and are proposed as the applicable discharge limits in this permit.

_ *pH*: The proposed discharge limits for pH are applicable for groundwater dischargers.

_ *Operator Requirements:* According to NAC 445A.289, a Certified Grade III Operator is required for supervision of this wastewater treatment plant, since tertiary treatment and disinfection are provided.

Schedule of Compliance: The Permittee shall submit the following items to the Division for review and approval. All compliance deliverables shall be addressed to the attention of:

Mr. Nadir Sous, Supervisor
Nevada Division of Environmental Protection
Bureau of Water Pollution Control
2030 E. Flamingo Rd.
Suite 230
Las Vegas, NV 89119

_ Within thirty (30) days of the permit issuance date, the Permittee shall submit notification to the Division of the irrigation cross-connection control and wellhead protection procedures documentation required by Part I.A.18 of the permit conditions.

_ The Permittee shall submit any revisions to the approved Operations & Maintenance (O&M) Manual for the wastewater treatment facility by December 30, 2008.

_ The Permittee shall submit a copy of any revisions to the approved Effluent Management Plan for irrigation reuse by December 30, 2008.

Procedures for Public Comment: The Notice of the Division=s intent to reissue the applicant a discharge permit authorizing the on-site treatment of domestic wastewater and subsequent reuse via irrigation, subject to the conditions contained within the permit is being sent to the **Las Vegas Review-Journal** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped
faxes, e-mails, or hand-delivered items) to the Division is September 30, 2008 by 5:00 P.M. A copy of the Public Notice and Fact Sheet can also be downloaded from the Division=s website at the following address: http://ndep.nv.gov/admin/public.htm

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Proposed Determination: The Division has made the tentative determination to reissue the proposed discharge/reuse permit for a period of five (5) years. The approval to allow water closets to be flushed with treated effluent is not granted by the Division. The facility has approval from the local building department health department for application and operation of indoor plumbing fixtures.

Prepared by: Icyl C. Mulligan.
Bureau of Water Pollution Control

: July 2008

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